

Motorola[®] HOME Radio

SERVICE MANUAL

MODELS

5R11A
5R12A
5R13A
5R14A
5R15A
5R16A

CHASSIS

HS-280

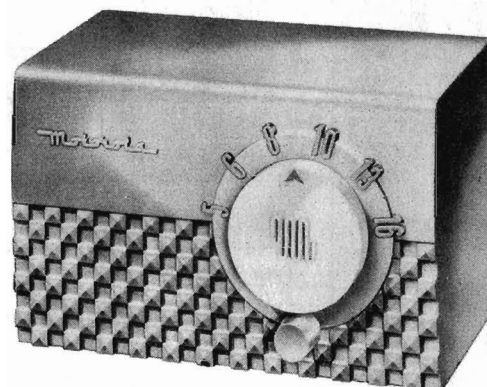
GENERAL INFORMATION

TYPE - AC-DC table model superheterodyne receiver with loop antenna.

RECEIVER MODELS -	Model	Color
	5R11A	Walnut-Mahogany
	5R12A	Ivory
	5R13A	Maroon
	5R14A	Gray
	5R15A	Green
	5R16A	Yellow

TUBE COMPLEMENT -	Type	Function
	12BE6	Converter
	12BA6	IF Amplifier
	12AT6	Det, AVC & AF Amp
	50C5	Power Amplifier

RECTIFIER - Selenium type



TUNING RANGE - 535 to 1620 Kc IF - 455 Kc

POWER SUPPLY - 117 volts AC or DC; 35 watts

INSTALLATION & OPERATING INSTRUCTIONS

ON-OFF SWITCH & VOLUME CONTROL. Operated with the small lower knob. NOTE: To operate on DC, the line plug must be inserted in the electrical outlet for correct polarity. If the set does not function, reverse the plug. When operating from AC, reversal of the line plug may improve reception.

TUNING CONTROL. Stations are tuned in with the large upper knob.

ANTENNA. The built-in loop antenna provides satisfactory reception in most locations. When receiving a distant or weak station, rotate the receiver slightly to get maximum signal pick-up. If additional pick-up is necessary, connect an external antenna by following the instructions printed on the rear panel. CAUTION: Never connect the chassis to a water pipe, radiator or other ground.

SERVICE NOTES

This receiver has one lead of the power line connected directly to the chassis. If AC power is used, it is recommended, when operating the chassis outside of its cabinet, that an isolation transformer be placed between the power line and the receiver to reduce the possibility of an electrical shock.

TO REMOVE CHASSIS FROM CABINET:

1. Pull off the two control knobs from the front of the re-

ceiver.

2. Remove the two split plugs which hold the loop to the cabinet.

3. Remove the two hex head screws at the rear edge of the chassis.

4. Slide the chassis from the cabinet.

4545 AUGUSTA BOULEVARD

Motorola Inc.

CHICAGO 51, ILLINOIS

ALIGNMENT

NOTE: If AC power is used, it is recommended that an isolation transformer be placed between the power line and the receiver to avoid hum and electrical shocks. If an isolation transformer is not available, connect the low side of the signal generator to chassis through a .1 mf capacitor.

1. Connect a low range output meter across the speaker voice coil.
2. Connect the low side of the signal generator to chassis.
3. Set the signal generator for 400 cycle, 30% modulation.

4. Turn the receiver volume control to maximum.

5. Use a small fibre screwdriver for aligning the IF and diode transformers.

6. As stages are brought into alignment, reduce the signal generator output to a level which produces less than .40 volts (.05 watt) across the voice coil to avoid overloading the receiver.

7. See Figure 1 for adjustment locations and the following chart for procedure.

ALIGNMENT CHART

STEP	DUMMY ANTENNA	GENERATOR CONNECTION	GENERATOR FREQUENCY	GANG SETTING	ADJUST	REMARKS
IF ALIGNMENT						
1.	.1 mf	Grid of conv. (pin 7, 12BE6)	455 Kc	Fully open	1, 2, 3, & 4 (IF cores)	Adjust for maximum.
RF ALIGNMENT						
2.	.1 mf	Grid of conv. (pin 7, 12BE6)	1620 Kc	Fully open	5 (Osc)	Adjust for maximum.
3.	-	Radiation loop*	1400 Kc	Tune for max	6 (Ant)	Adjust for maximum.

*Connect generator output across 5" diameter, 5 turn loop and couple inductively to receiver loop. Keep loops at least 12" apart.

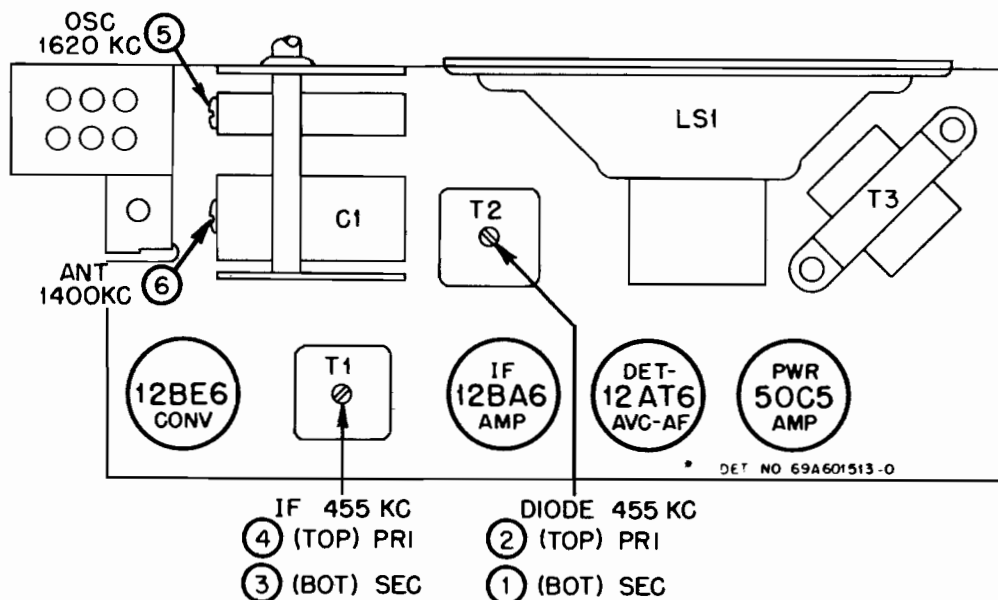


FIGURE 1. TUBE AND TRIMMER LOCATIONS

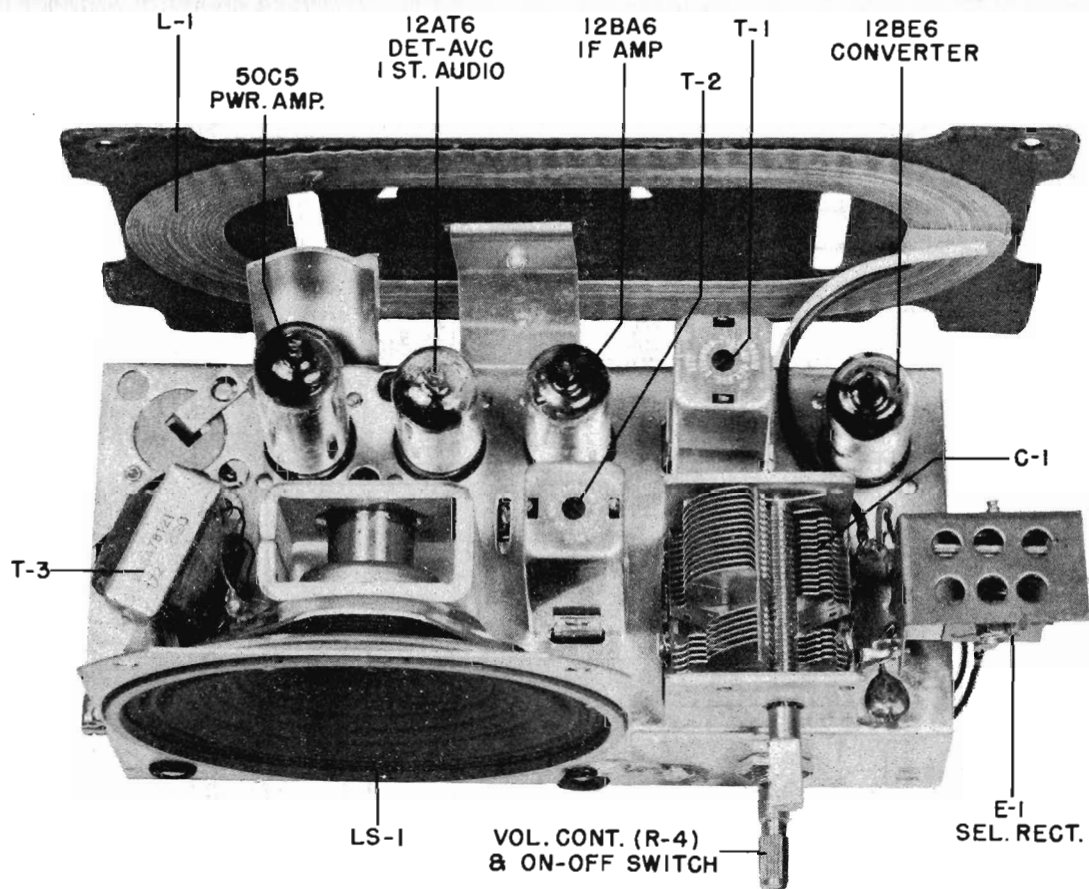


FIGURE 2. TOP VIEW OF CHASSIS

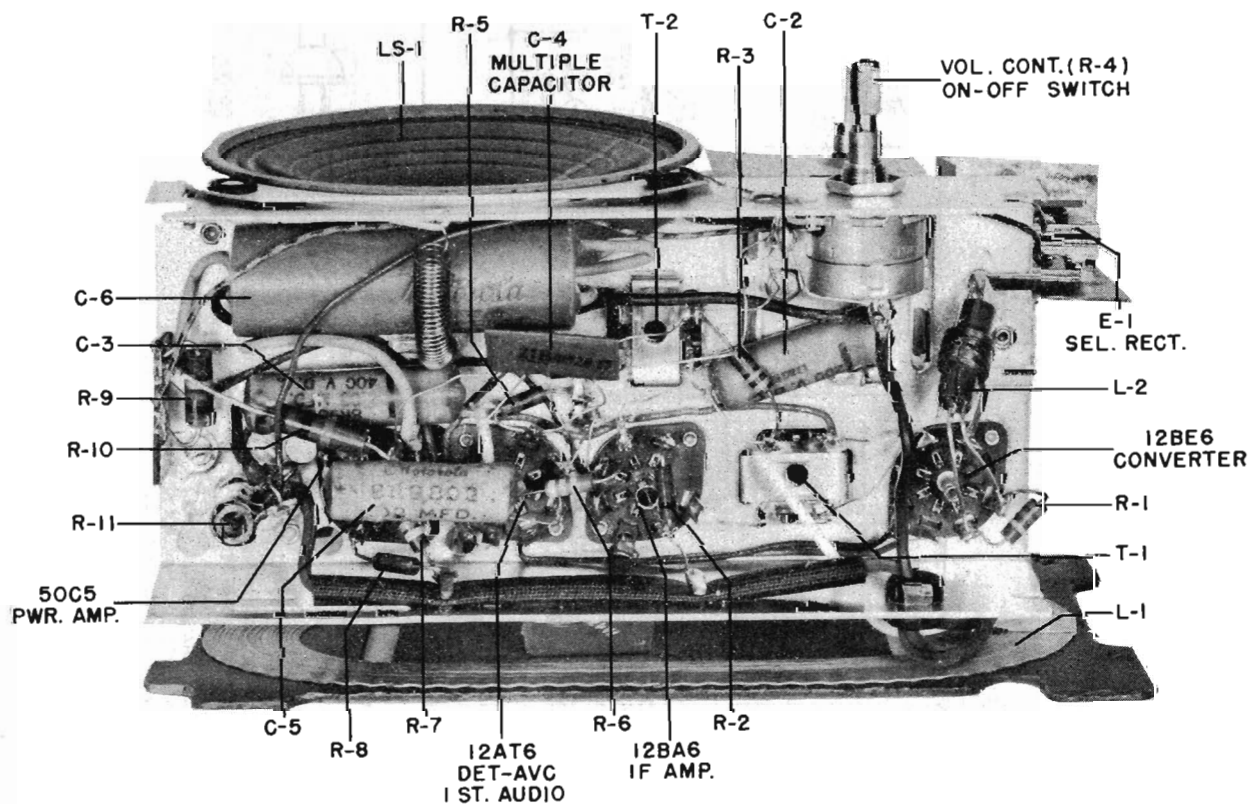


FIGURE 3. BOTTOM VIEW OF CHASSIS USING MULTIPLE CERAMIC CAPACITOR PLATE

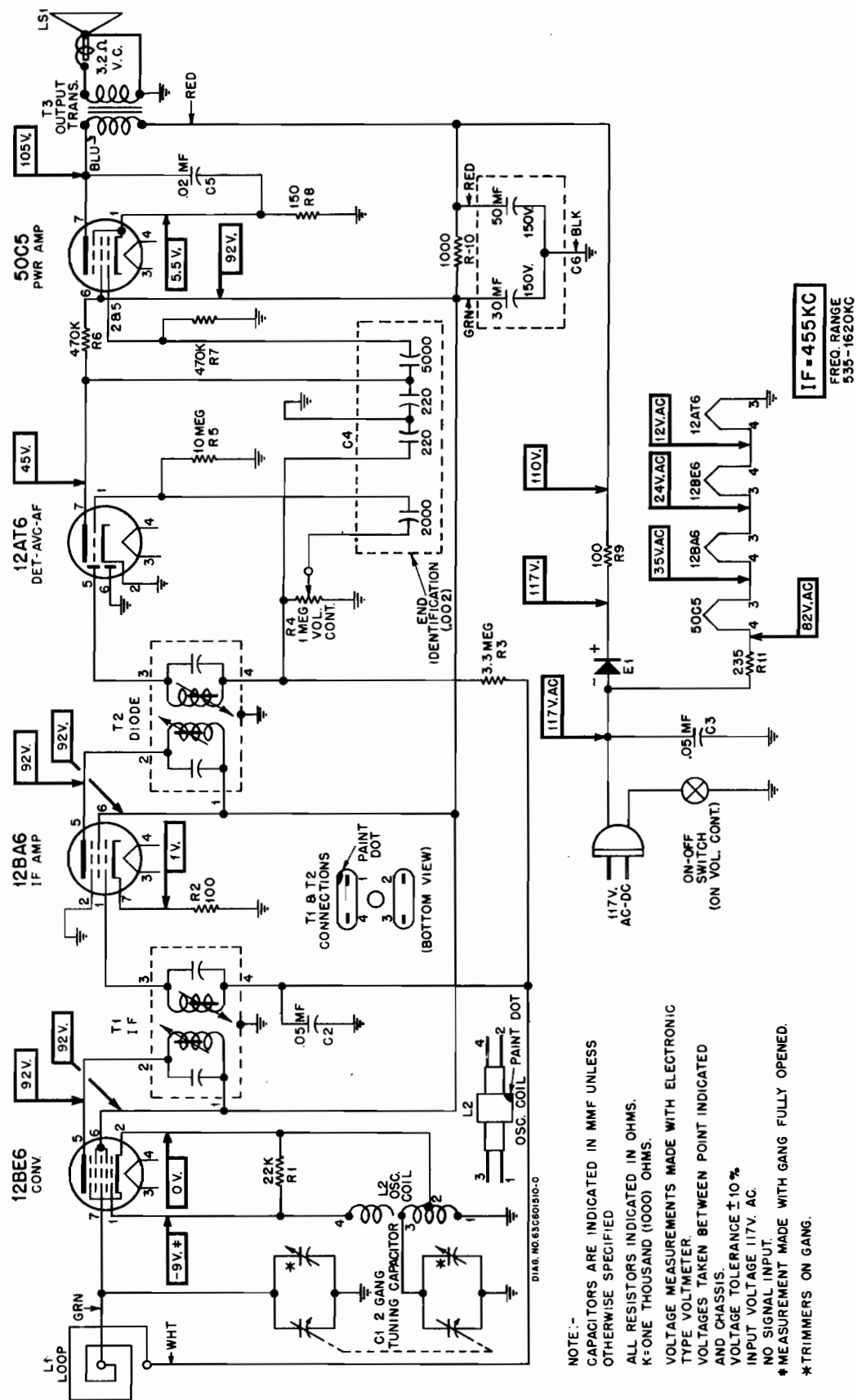


FIGURE 4. SCHEMATIC DIAGRAM OF CHASSIS USING MULTIPLE CERAMIC CAPACITOR PLATE

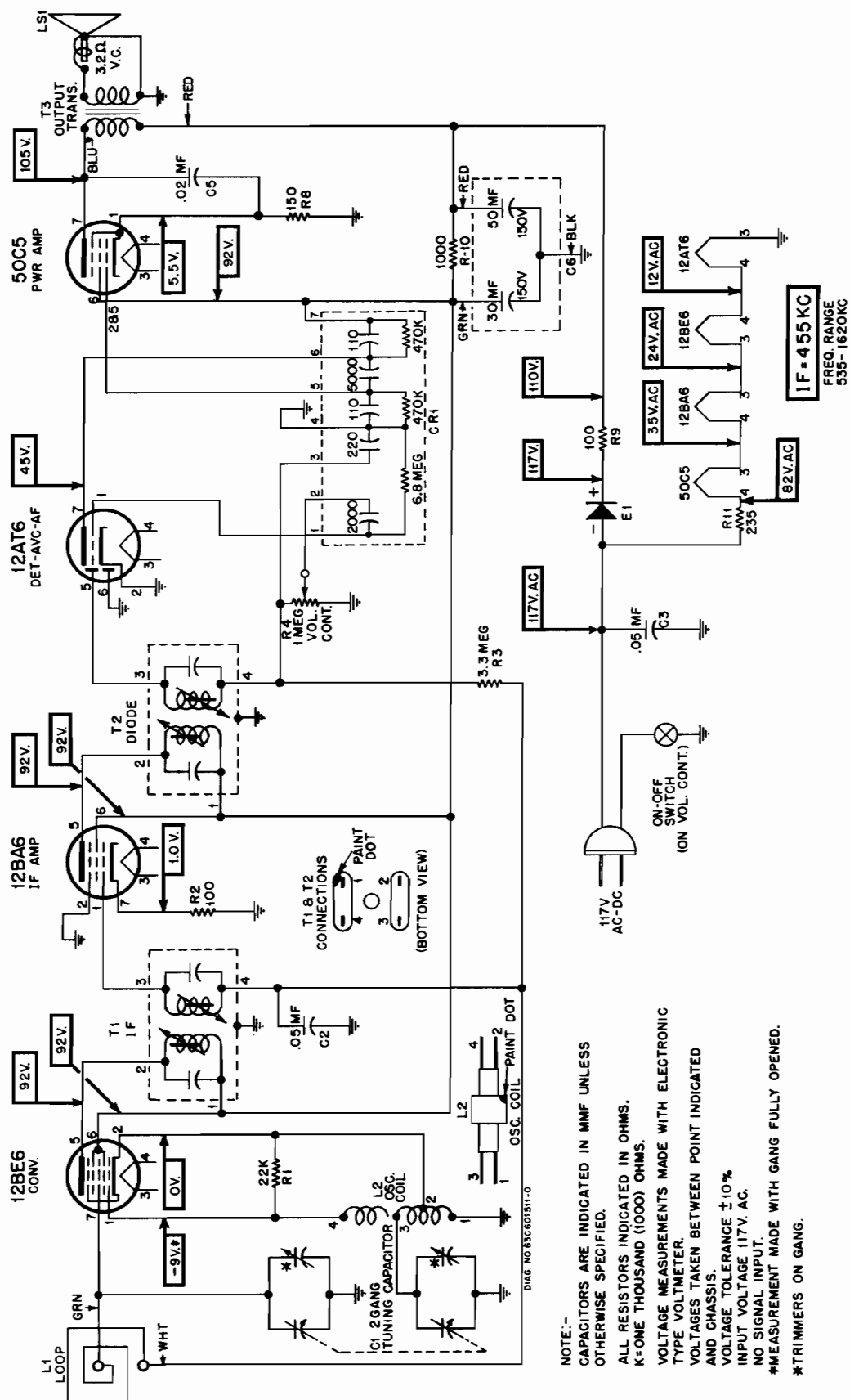


FIGURE 5. SCHEMATIC DIAGRAM OF CHASSIS USING MULTIPLE CERAMIC CAPACITOR-RESISTOR PLATE

REPLACEMENT PARTS LIST

NOTE: When ordering parts, specify model number of set in addition to part number and description of part.

Ref. No.	Part Number	Description	List Price	Part No.	Description	List Price
CHASSIS PARTS - ELECTRICAL				CHASSIS PARTS - MECHANICAL		
<u>Capacitors</u>				7A478118	Bracket, loop mtg.....	.05
C-1	19B600485	Variable: 2 gang; with pulley.....	2.55	7B601649	Bracket, rectifier mtg.....	.20
C-2	8R9821	Paper: .05 mf 200V.....	.20	43A692012	Bushing, strain relief(line cord).	.05
C-3	8R9816	Paper: .05 mf 400V.....	.20	43A692013	Bushing, retainer: strain relief (line cord).....	.05
C-4	21B482847	Ceramic, multiple: 2000 mmf, 220 mmf, 220 mmf, 5000 mmf.....	.65	42A485548	Clip, IF & Diode Transformer mtg doz	.20
C-5	8R9802	Paper: .02 mf 400V.....	.20	30K478137	Cord, line and plug: 6 feet long..	.55
C-6	23B600855	Electrolytic: 50-30 mf/150V	1.10	5A484268	Grommet, rubber (speaker mtg)..doz	.20
<u>Capacitor-Resistor</u>				14A478119	Insulator, fibre (loop bracket mtg).....doz	.15
CR-1	21B601007	Capacitor-Resistor: 2000 mmf, 220 mmf, 5000 mmf, 110 mmf, 110 mmf, 6.8 meg, 470,000 ohms, 470,000 ohms.....	.85	2S7051	Nut, hex: 3/8-32 x 9/16; stl; cad pl (volume control mtg).....doz	.15
<u>Rectifier</u>				5S7771	Rivet: .088 x 3/16; stl; nkl pl (tube socket mtg).....per/c	.50
E-1	48B791092	Rectifier, selenium: half wave.....	1.40	5S7707	Rivet: .122 x 5/32; stl; nkl pl (output trans mtg & rect bracket mtg).....per/c	.50
<u>Coils</u>				5S7703	Rivet: .122 x 7/32; stl; nkl pl (loop bracket and speaker mtg) per/c	.50
L-1	24K601662	Antenna Loop and Panel Assembly.....	.95*	3S7247	Screw, machine: 6-32 x 3/16 slotted hex head; locking type; stl; cad pl (gang mtg).....doz	.15
L-2	24A478129	Oscillator coil.....	.90	3S490507	Screw, sheet metal: #6 x 18 x 1 plain hex head; stl; cad pl (rectifier mtg).....doz	.15
<u>Speaker</u>				26A478117	Shield, electrostatic (on rear of chassis).....doz	.55
LS-1	50B690661	Speaker: 4" PM; 3.2 ohm VC.....	2.60*	9A472534	Socket, tube: miniature; 7 prong..	.15
		exch	1.95	41A73996	Spring, tension (electrolytic mtg)	.05
<u>Resistors</u>				31K83993	Strip, terminal: 2 insulated lugs, #1 gnd; 3/8" spacing.....	.05
Note: All resistors are insulated carbon type unless otherwise specified.				46A478145	Stud, tri-mount (loop mtg to bracket).....doz	.15
R-1	6R6028	22,000 20% 1/2W.....doz	1.20	14A11493	Washer, shoulder: fibre (loop bracket mtg).....doz	.35
R-2	6R6018	100 20% 1/2W.....doz	1.20	CABINET PARTS		
R-3	6R2118	3.3 meg 20% 1/2W.....doz	1.20	16K600181	Cabinet, table model : walnut-mahogany (5R11A).....	2.85*
R-4	18K600449	Volume control: 1 meg; with switch.....	1.20	16E600157	Cabinet, table model: ivory (5R12A).....	3.50*
R-5	6R2109	10 meg 20% 1/2W.....doz	1.20	16K600183	Cabinet, table model: maroon (5R13A).....	3.50*
R-6	6R6032	470,000 20% 1/2W.....doz	1.20	16K600184	Cabinet, table model: gray (5R14A).....	3.50*
R-7	6R6032	470,000 20% 1/2W.....doz	1.20	16K600185	Cabinet, table model: green (5R15A).....	3.50*
R-8	6R3992	150 20% 1/2W.....doz	1.20	16K600186	Cabinet, table model: yellow (5R16A).....	3.50*
R-9	6R6415	100 10% 1W.....each	.20	36B600485	Knob, tuning: ivory (5R11A, 5R13A, 5R14A, and 5R15A).....	.25
R-10	6R3953	1000 20% 1W.....each	.20	36K600486	Knob, tuning: red (5R12A).....	.25
R-11	17A601647	Wirewound: 235 10% 5W....	.75	36K600487	Knob, tuning: blue (5R16A).....	.25
<u>Transformers</u>				36B600544	Knob, volume control: walnut (5R11A).....	.10
T-1,2	24B485553	IF and Diode, Transformer (green dot): 455 KC; complete with capacitors, cores, and shield.....	.95	36K600545	Knob, volume control: ivory (5R12A).....	.10
T-3	25B478121	Output Transformer.....	1.05			

*Plus Federal Excise Tax At Current Rate

<u>Part No.</u>	<u>Description</u>	<u>List Price</u>	<u>Part No.</u>	<u>Description</u>	<u>List Price</u>
36K600546	Knob, volume control: maroon (5R13A).....	.10	3S476083	Screw, machine: 6-32 x 5/16; slotted hex head; stl; cad pl; locking type (chassis mtg)....doz	.15
36K600547	Knob, volume control: gray (5R14A).....	.10	38A25507	Plug, split (back mtg to cabinet doz	.15
36K600548	Knob, volume control: green (5R15A).....	.10	11M488253	Tape; aluminum foil: 2 1/2" wide ft	.10
36K600549	Knob, volume control: yellow (5R16A).....	.10			

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

